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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ingo Bohm

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EXAMINER

AMARI, ALESSANDRO V

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/596,234	<b>Applicant(s)</b> BOHM ET AL.	
	<b>Examiner</b> ALESSANDRO AMARI	<b>Art Unit</b> 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/1/2008</u>   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 15-23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knebel et al (hereafter "Knebel") US 2002/0020800 in view of Birk et al (hereafter "Birk") US 2002/0043622.

In regard to claim 15, Knebel discloses (see Figures 1-3) a scanning microscope comprising: at least one light source (3, 4, 8) configured to generate an illuminating light beam; an acousto-optical element configured to spatially split a sub-light beam from the illuminating light beam and adjust an optical power of the illuminating light beam as described in paragraph [0032]; a beam deflection device (12) configured to scan the illuminating light beam over or through a sample (1).

However, in regard to claim 15, Knebel does not teach a beam guiding device configured to direct the sub-light beam onto the sample.

In regard to claim 15, Birk teaches (see Figures 1, 2) a beam guiding device (3) to direct a beam onto a sample as described in paragraph [0008]. Regarding claim 16, Birk teaches that the beam guiding device is configured to direct the sub-light beam onto the sample so as to manipulate the sample as described in paragraph [0008].

Regarding claim 22, Birk teaches that the beam guiding device includes an optical waveguide as described in paragraphs [0008] – [0010].

One of ordinary skill in the art would have applied the known technique of using a beam guiding device such as a waveguide to mechanically decouple the laser light source from the scanning microscope to achieve the predictable result of reducing vibrations induced by the laser light source. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the beam guiding device or waveguide of Birk with the microscope of Knebel in order to reduce vibrations.

Regarding claim 17, Knebel discloses that the acousto-optical element includes an acousto-optical tunable filter as described in paragraph [0032].

Regarding claim 18, Knebel discloses comprising a further beam deflection device configured to scan the sub-light beam over or through the sample as described in paragraph [0024].

Regarding claim 19, Knebel discloses (see Figures 1-3) further comprising an objective lens (2) configured to focus the illuminating light beam onto the sample.

Regarding claim 23, Knebel teaches that the sub-light beam has a specific polarization property as described in paragraph [0032]. Although the prior art does not specifically disclose the claimed polarization property, this is seen as an inherent teaching of the device since the acousto-optical element would impart a specific polarization property to the beam.

Regarding claim 29, Knebel discloses an excitation pinhole (15) configured to support confocal scanning microscopy as described in paragraph [0056].

Regarding claim 20, the Knebel-Birk combination discloses the claimed invention except for the rearrangement of the beam path such that the objective lens is configured to focus the sub-light beam (from the light source) onto the sample. It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the beam path so that it focuses the sub-light beam from the light source, since it has been held that a mere rearrangement of elements without modification of the operation of the device involves only routine skill in the art. One would have been motivated to rearrange the beam path for the purpose of providing for a shorter optical path so as to achieve the predictable result of mitigating optical losses in the microscope system. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)

Regarding claim 21, the Knebel-Birk combination discloses the claimed invention and teaches further comprising a further objective lens (20) as shown in Figure 3 but does not teach the rearrangement of the beam path such that the objective lens is configured to focus the sub-light beam (from the light source) onto the sample. It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the beam path so that it focuses the sub-light beam from the light source, since it has been held that a mere rearrangement of elements without modification of the operation of the device involves only routine skill in the art. One would have been motivated to rearrange the beam path for the purpose of providing for a shorter optical path so as to achieve the predictable result of mitigating optical losses in the microscope system. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)

3. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knebel et al (hereafter "Knebel") US 2002/0020800 in view of Birk et al (hereafter "Birk") US 2002/0043622 and further in view of Birk et al (hereafter "Birk '044") US 2002/0028044.

Regarding claims 24 and 25, the Knebel-Birk combination teaches the invention as set forth above but does not teach further comprising a polarization control device disposed between the at least one light source and the acousto-optical element and wherein the polarization control device includes a  $\lambda/2$  plate.

Regarding claims 24 and 25, Birk '044 teaches a polarization control device disposed between the at least one light source and the acousto-optical element and wherein the polarization control device includes a  $\lambda/2$  plate as described in paragraph [0039]. One of ordinary skill in the art would have applied the known technique of a polarization control device such as a  $\lambda/2$  plate in to achieve the predictable result of reducing polarization losses of the device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the  $\lambda/2$  plate of Birk '044 in the system of the Knebel-Birk combination in order to reduce polarization dispersion losses and polarization mode dispersion.

4. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knebel et al (hereafter "Knebel") US 2002/0020800 in view of Birk et al (hereafter "Birk") US 2002/0043622 and further in view of Hartmann et al (hereafter "Hartmann") US 6,525,812.

Regarding claims 26-28, the Knebel-Birk combination teaches the invention as set forth above but does not teach further comprising a dispersion compensation device configured to compensate for spatial spectral dispersion, caused by the acousto-optical element, of at least one of the sub-light beam and the illuminating light beam or regarding claim 27, wherein the dispersion compensation device includes at least one of a prism, a grating and a further acousto-optical element or regarding claim 28, that the acousto-optical element is configured to direct, to a detector, detection light emanating from the sample.

Regarding claim 26, Hartmann teaches (see Figures 1, 2) a dispersion compensation device (8) configured to compensate for spatial spectral dispersion, caused by the acousto-optical element, of at least one of the sub-light beam and the illuminating light beam as described in column 2, lines 4-44 and column 6, lines 6-27. Regarding claim 27, Hartmann teaches that the dispersion compensation device includes at least one of a prism, a grating and a further acousto-optical element as described in column 6, lines 6-27. Regarding claim 28, Hartmann (see Figures 1, 2) teaches that the acousto-optical element is configured to direct, to a detector (17, 18), detection light emanating from the sample.

One of ordinary skill in the art would have applied the known technique of using a dispersion compensation device such as an acousto-optical element to achieve the predictable result of converting the divergent light into non-divergent light so that it can be detected with detectors of ordinary size and sensitivity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the

dispersion compensation device of Hartmann for use in the Knebel-Birk combination in order to provide for an infinite detection beam path.

### ***Response to Arguments***

5. Applicant's arguments filed 01 December 2008 have been fully considered but they are not persuasive.

The Applicant argues that the prior art, Knebel does not disclose an acousto-optical element configured to split from an illuminating light beam a sub-light beam that is directable on to a sample as recited in claim 15. Further, the Applicant asserts that Knebel merely describes inputting light into a beam path using an acousto-optical device.

In response to this argument, the Examiner would like to point out that Knebel does more than simply describe inputting light into a beam path using an acousto-optical device but at the very least suggests that an acousto-optical device such as an acousto-optical beam splitter can be provided for the illumination and manipulation beam path as described in paragraph [0032] page 7 of the specification, reproduced below:

At least one spectrally selective element is provided to input the illumination and/or manipulation light. Light of at least one specific wavelength can be selected and input into the respective beam path and/or optical power of the light to be input can be varied by the spectrally selective element. The spectrally selective element could comprise an AOTF (acousto-optical tunable filter) AOBS (acousto-optical beam splitter), AOD (acousto-optical deflector) and/or EOM (electro-optical modulator) and be driven by a control computer, preferably as a function of the illumination and/or manipulation beam position. As a result,



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selective input of light having a plurality of wavelengths into the illumination and/or manipulation light beam path is possible, the input optical power also being controllable as a function of the corresponding beam position.

It is noted that "in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968). Therefore, Knebel suggests or infers that an acousto-optical beam splitter is provided to input illumination and manipulation light (i.e., splitting a sub-light beam) with the manipulation light or sub-light beam being directed onto a sample as recited in claim 15.

The Applicant further argues that Knebel does not teach a beam guiding device configured to direct a sub-light beam onto a sample and that Birk '622 merely describes an optical waveguide element 3 for transporting light from a laser 1 to an objective 12.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Birk provides a teaching of a beam guiding device (i.e., a waveguide) which is used in scanning microscopes to transport light as part of the combination with Knebel which provides the teaching of directing a sub-light beam onto a sample. In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious.

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*Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983);  
*Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983). Therefore,  
the combination of references considered as a whole provide the teaching of a beam  
guiding device configured to direct the sub-light beam onto the sample as recited in  
claim 15.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time  
policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE  
MONTHS from the mailing date of this action. In the event a first reply is filed within  
TWO MONTHS of the mailing date of this final action and the advisory action is not  
mailed until after the end of the THREE-MONTH shortened statutory period, then the  
shortened statutory period will expire on the date the advisory action is mailed, and any  
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of  
the advisory action. In no event, however, will the statutory period for reply expire later  
than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the  
examiner should be directed to ALESSANDRO AMARI whose telephone number is  
(571)272-2306. The examiner can normally be reached on Monday-Friday 8:00 AM to  
5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ava  
04 February 2009

/Alessandro Amari/  
Primary Examiner, Art Unit 2872